

**Comments of The Alliance for Solar Choice
on the E3 Draft Net Energy Metering Cost-Effectiveness Study**

The Alliance for Solar Choice (TASC) submits these comments pursuant to a September 26, 2013 e-mail from Ehren Seybert of the CPUC Energy Division. Energy Division asked that parties provide comments on apparent errors in the draft net energy metering cost-effectiveness analysis (Draft NEM Study), developed by the Energy and Environmental Economics consulting firm (E3) and released on September 26, 2013.

In providing these comments, TASC notes that there are a number of areas where the E3 analysis is “black box”, precluding robust stakeholder review. In particular, E3 has not released or made available the underlying SAS data and analyses used to create NEM profiles for each NEM customer included in the analysis. This information is a fundamental component of the overall analysis but is largely inaccessible to stakeholders. Similarly, E3 has not made the underlying data available regarding distribution system loading, again confounding stakeholders from assessing the reasonableness of the results related to avoided T&D costs. While confidentiality issues may need to be addressed, we request this data be made available under a confidentiality agreement, at least to non-market participants to the extent the information is subject to the Commission’s confidentiality rules.

a. The Scope of the Analysis Should Be Limited to Exports-Only.

The scope of a cost / benefit analysis of NEM should be limited to the power that is exported to the grid from NEM systems, and should not include the output from behind-the-meter generation that serves the customer’s onsite load. Longstanding federal law (PURPA) and the California policies implementing that law allow a customer to install on-site renewable generation that is interconnected to the grid and serves on-site load, even without NEM. Net metering concerns the bill credit that a customer receives for power exported to the grid from a system, and thus the costs and benefits of NEM should be based only on an analysis of exports. As a result, while we acknowledge that Assembly Bill 2514 (Bradford, 2012) required all-output results be included in the study, we dispute the relevancy of those results in the Draft NEM Study.¹

b. Results Are Highly Suspect Due to Reliance on Outdated Rates.

To calculate NEM customer bill savings, E3 utilized 2011 rates.² At the same time, throughout the draft study, E3 qualifies its analysis by noting that rate design plays a fundamental role in the calculations, and that changes to rate design could have substantial impacts on the study’s results.³ In light of this, and the fact that there have been significant changes to residential rates since 2011, we request that more current rate structures, specifically those that are currently in place, be used in the final study rather than the now outdated 2011 rates. While rate structures are expected to change significantly in the future as a result of enactment of AB 327, which removes caps on lower-tier rate increases and authorizes fixed charges up to \$10 for non-CARE customers, we believe current rates

¹ See page 2 of “Comments of the Solar Energy Industries Association, Vote Solar Initiative, Sierra Club California, and California Solar Energy Industries Association on the Scope of Work for the CPUC/E3 Net Energy Metering Study,” submitted to Energy Division November 5, 2012 (“Joint Parties Comments”).

² See page 43 of Draft NEM study.

³ See, for example, pages 3-4 of the Draft E3 Study, which states, “...changes to the tiered rates would have a significant impact on the study results. Similarly, differences in retail rates should be an important consideration for policymakers outside of California that are using this study.”

are likely to be more reflective of the general direction of rate design relative to the 2011 rates on which the study relied.

c. NEM Generation Should Be Valued at 100% of Renewable Premium.

The Draft NEM Study fails to fully value the 100% renewable content of NEM output and exports, compared to the 20% to 33% grid power that NEM generation displaces. For several reasons, we continue to recommend that the final study include a sensitivity valuing net-metered generation at 100% of the renewable premium in all years.⁴ First, net-metered generation replaces grid power (of which only a fraction is renewable) with 100% renewable generation. Second, the utilities themselves have argued in their shared renewables applications at the Commission that there is an additional ratepayer cost associated with going beyond a 33% renewable penetration. Finally, with the enactment of AB 327, the Commission is authorized to require utilities to procure renewables in excess of existing RPS targets, making it reasonable to assume that there is value to renewables in excess of what is now a 33% RPS minimum requirement. Therefore, we request that the final study include two additional sensitivities: first, a sensitivity assuming that the RPS is raised to 50% by 2030, and, second, a sensitivity assuming all NEM output is fully valued as 100% renewable.

d. The Study Fails to Show Participant Impacts as Required by AB 2514.

The Draft NEM Study looks only at impacts from the perspective of non-participating ratepayers, in conflict with the statutory requirements pursuant to AB 2514, which requires the Commission to provide an analysis of NEM from the perspective of participating ratepayers in addition to non-participating customers.⁵ We request that this analysis be included in the final study.

e. The Study is Inconsistent with the Commission's Standard Practice Manual.

In evaluating the costs and benefits of customer side programs, the Commission's Standard Practice Manual identifies four tests, each of which quantifies the costs and benefit that can be attributed to a given program or resource from various perspectives.⁶ The cost-benefit analysis performed by E3 is confined to the Ratepayer Impact Measure (RIM) Test, looking exclusively at the costs and benefits from the standpoint of non-participating customers. This should not be the only perspective considered. In the context of the Commission's energy efficiency programs, the tests used to determine whether the benefits exceed costs and whether the IOUs' multi-billion dollar energy efficiency portfolios should be approved are the Total Resource Cost (TRC) Test and the Program Administrator Cost (PAC) Test, both of which encompass a broader, and, for policy-making purposes, more reasonable set of costs and benefits. In the final study, E3 should at a minimum include results from a Participant Test; combining this with the non-participant study results will provide the Commission with all the information it needs to perform a Total Resource Cost ("TRC")

⁴ See pages 4-5 of Joint Parties Comments and pages 2-3 of "Reply Comments of the Sierra Club and Vote Solar Initiative on the Scope of Work for the CPUC/E3 Net Energy Metering Study," submitted to Energy Division November 15, 2012.

⁵ See PUC code section 2827.1 which states "The study shall quantify the costs and benefits of net energy metering to participants and nonparticipants and shall further disaggregate the results by utility, customer class, and household income groups within the residential class."

⁶ See California Standard Practice Manual; http://www.cpuc.ca.gov/NR/rdonlyres/004ABF9D-027C-4BE1-9AE1-CE56ADF8DADC/0/CPUC_STANDARD_PRACTICE_MANUAL.pdf

test, which is considered an important approach in the analysis of the cost-effectiveness of demand-side programs.⁷

f. The Study Should Include Societal Costs and Benefits.

The final study should assess not just ratepayer costs and benefits of NEM, but should include societal costs (if any) and benefits associated with NEM systems as well. These societal benefits are explicitly excluded from consideration in the Draft NEM Study. In comments to Energy Division on June 5, 2013, TASC, Vote Solar and a host of public health, conservation and environmental justice groups supported developing a comprehensive Societal Cost Test and applying it to customer-sited DG resources and to the NEM program.

g. The Study Should Not Include a Resource Balance Year (RBY) in the Base Case.

The final study should not include a Resource Balance Year (RBY) in the Base Case. In other words, the study should assume long-run avoided costs in all years, rather than shifting from short-run to long-run avoided costs at a future RBY. In D. 10-12-024, the Commission rejected the use of the RBY concept for evaluating demand response resources, finding that the use of long-run avoided costs in all years was consistent with the status of DR as a preferred resource in the state's loading order for electric resources. Renewable distributed generation (DG) is also a preferred resource, and the logic and precedent of D. 10-12-024 should be extended to renewable, net-metered DG as well.⁸

h. The Study Should Use Existing Methods to Allocate Generation and Distribution Capacity Costs.

E3 uses a method to allocate generation capacity that has not been vetted with stakeholders in a DG proceeding, or perhaps even with non-IOU stakeholders. Although the Final SOW indicated that E3 might use a new allocation method ("if time allows" – page 13), no details about the approach were provided except that it would be an "ELCC model" (page 18). TASC is not a participant in the demand response (DR) proceeding where this method apparently was developed. The two weeks since the draft NEM Study was issued have not provided enough time to review in any detail the new E3 "Capacity Planning Model." We are unsure whether non-IOU parties were involved in the model's development; the Draft NEM Study only states, at page C-35: "E3 has held numerous meetings with the IOU subject matter experts on the model, and the model has been released to the utilities for their review." TASC urges the Energy Division to retain the transparent 250-hour method that E3 used previously. At a minimum, sensitivities need to be run to show how the old and new allocation models impact the study's results. Finally, as noted below, the 250-hour method also is more consistent with E3's approach to allocating distribution capacity costs.

TASC observes that E3's new model for allocating generation capacity costs is based on loss-of-load probability (LOLP) modeling that does not use total system load, but instead uses load net of must-take renewable resources (see page C-35). We question why only renewable resources are treated as a deterministic subtractor to load; correctly representing the impact of these intermittent resources on the reliability of the system would seem to require a stochastic treatment, just like the probabilistic treatment of conventional resources that are sometimes forced out. E3's method using loads net of solar appears to create artificially low net loads (and thus low LOLPs) during the

⁷ See page 1 of Joint Parties Comments and pages 3-5 of "Comments of the interstate Renewable Energy Council on E3's Proposed Scope of Work Regarding Net Energy Metering Cost-Effectiveness," submitted to Energy Division November 5, 2012.

⁸ See pp.8-9 of Joint Parties Comments.

afternoon hours when solar generation is high. For example, baseload nuclear and QF units also are non-dispatchable must-take generation; why shouldn't these units be subtracted from total load to determine net loads?

E3 also has a new model for allocating distribution capacity costs that is based on an analysis of utility data on distribution substation load shapes. The model has not been vetted previously, although the technique E3 uses is familiar. The new allocation method uses a peak capacity allocation factor (PCAF) approach that is similar to the 250-hour peak hour allocation method that E3 is no longer using to allocate generation capacity costs. We also note that PG&E has long used the PCAF method to allocate peak-related costs, including generation capacity costs. It is unclear why the 250-hour method is unsuitable for generation capacity but a similar approach is fine for distribution capacity. Further, the substation load data is confidential, and if it is from 2011, it could be dominated by the September heat wave (see Appendix D, Figure 1). It is not clear whether this allocation was normalized to a TMY.

Finally, E3 has not provided any details on how it aggregated the allocators for individual substations into the allocators for climate zones used in the avoided cost model. The majority of NEM customers for PG&E and SCE are commercial & industrial whose loads tend to peak in the mid-afternoon (see Table 9); it is residential circuits that peak in the evening. Thus, it is not clear why the allocation of distribution capacity costs serving NEM customers should be shifted later in the day compared to the allocation of generation capacity. We have aggregated the distribution capacity allocators, and this allocation peaks later in the day than the generation capacity allocation. TASC does not understand why an aggregate allocation of distribution capacity over all climate zones should differ significantly from the generation capacity allocation.

i. CARE Customers Should Be Excluded From The Analysis of NEM Participation by Household Income.

The E3 analysis compares the median household income of customers that have NEM systems with the median household income of all IOU customer households, as well as all California households, including CARE customers. We believe a more appropriate comparison would be between households that have solar and non-CARE households given that CARE rates are heavily subsidized and thus have very limited financial incentive to go solar. In other words, limited uptake of solar among lower income households is driven in no small part by the fact that solar does not make economic sense for the vast majority of CARE customers on subsidized rates. Because CARE customers represent about 30% of the IOUs' residential customers, excluding them from the calculation of the IOUs' median household income would raise this substantially, resulting in a much smaller gap in terms of the relative incomes of those that have NEM systems and those that do not.

j. Residential Minimum Bill Impacts Should Be Included.

E3 ignores the minimum bills paid by NEM residential customers. See page B-7: "Bill calculations do not include any minimum charges. Minimum charges are common for residential customers, but their values are small and do not significantly impact the total annual bill amount." This may not be correct, as it is our understanding that minimum bills are paid every month by every NEM residential customer who is on annual billing, even if they have a positive bill credit balance for that month (as E3 admits on page B-3). Residential NEM customers on annual billing only pay their accumulated credit balance once each year, so they are subject to the minimum bill each month. These minimum charges are significant; the following table shows what they would be on an annual

basis if all NEM customers were on annual billing (we do not know what % of NEM customers are on monthly vs. annual billing).

Utility	Number of 2011 Residential NEM Customers	Annual Minimum Bills	Total
PG&E	70,000	\$54	\$3,780,000
SCE	24,000	\$22	\$530,000
SDG&E	17,000	\$62	\$1,050,000
TOTAL	110,000		\$5,360,000

Given that when the 5% NEM cap is reached there could be five times more NEM customers than shown in this table, the minimum bill revenues could be as much as \$25 million per year for residential NEM customers. This would be a significant factor in reducing NEM costs.

k. The Return of GHG Allowance Revenues Should Be Recognized.

The Draft NEM Study says GHG costs are a “key input” of retail rate escalation (pages B-12 and B-13). This ignores the fact that residential and small commercial customers are protected from increased costs due to GHG regulation by the return of GHG allowance revenues, as adopted by the Commission in D. 12-12-033. Residential customers will even receive a “climate dividend.” E3 appears to have based its rate escalation on a 2010 LTPP model, which pre-dates and does not include the Commission’s subsequent policy orders on the return of GHG allowance revenues to residential customers.

l. Additional Items Addressed in Detail in Comments By the Vote Solar Initiative:

In an effort to keep these comments within the page limit requested by Energy Division, TASC addresses in full only a subset of our concerns. In addition, we fully concur with the additional and distinct concerns raised by The Vote Solar Initiative in comments on the Draft NEM Study that they submitted on October 10, 2013, including the following:

- The study should highlight annual NEM impacts based on the 20-year analysis.
- Vintaging of ELCC’s should be clarified and included in the base case.
- Results should be reported by rate schedule in the body of the study.
- The study should include avoided high-voltage transmission costs. Notably, by excluding these avoided costs, the E3 study is actually more conservative than a similar analysis conducted by SDG&E.⁹
- The study should use updated marginal costs from utility general rate cases and use those costs consistently across the avoided cost model and cost-of-service study.
- A spreadsheet error in the allocation of capacity costs should be fixed.
- There is an apparent error in the “high case” capacity costs in Figure 15.
- SONGS should be removed from the Resource Balance Year Calculation.
- Market heat rates should use post-SONGS values.

TASC appreciates the opportunity to present these comments on errors and other issues we have identified in the Draft NEM Study. We look forward to reviewing a Final Study that addresses these issues.

⁹ San Diego Distributed Solar PV Impact Study, at 48-49, Tables 19-20.

Respectfully submitted this 10th day of October, 2013.



Anne Smart
Executive Director
The Alliance for Solar Choice
595 Market Street, 30th Floor
San Francisco, CA 94105
Phone: (415) 580-6900
E-mail: anne@allianceforsolarchoice.com